

Amendments to the Claims

1. (Currently Amended) A vulcanized, automotive, fluid-conveying tubular structure exhibiting heat tolerant, pressure resistant, hydrocarbon fluid impermeable characteristics, said tubular structure ~~comprising a vinyl ester copolymer matrix, wherein said vinyl ester copolymer matrix contains greater than 40% vinyl ester based on the weight of said copolymer consisting essentially of:~~

about 30 to 75% by weight of an ethylene-vinyl acetate copolymer matrix, wherein said ethylene-vinyl acetate copolymer matrix has a vinyl acetate content greater than about 40%;

up to about 50% by weight of a polymeric material selected from the group consisting of ethylene-propylene-diene terpolymer (EPDM), styrene-butadiene rubber (SBR), acrylonitrile-butadiene rubber (NBR), ethylene-propylene rubber (EPR), butyl rubber, cis-polybutadiene, cis-polyisoprene, polyurethane, and mixtures thereof; and

about 25 to 70% by weight of one or more additives selected from the group consisting of process aids, fillers, plasticizers, metal oxides, metal hydroxides, peroxides, coagents, antioxidants and combinations thereof.

2. (Currently Amended) The tubular structure of claim 1, wherein said vinyl ester acetate copolymer matrix contains has a vinyl acetate content of about 60 to 90% vinyl ester based on the weight of said copolymer.

3-7 Canceled

8. (Currently Amended) The tubular structure of claim 7 1 wherein said composition comprises tubular structure consists essentially of:

about 45 to 60% by weight of said ethylene-vinyl acetate copolymer matrix; and

up to about 10% by weight of said polymeric material; and

about 40 to 55% by weight of said one or more additives, said one or more additives comprising; consisting essentially of:

(a) up to about 0.8 to 2.8% by weight of said one or more process aid aids selected

from the group consisting of stearic acid, stearates, polyethylene, amines, oils, organic esters, organic phosphate esters and combinations thereof;

(b) about 20 to 60% by weight of one or more fillers ~~filler~~ selected from the group consisting of carbon black, silicon dioxide, fumed silica, precipitated silica, diatomaceous earth, magnesium carbonate, magnesium silicate, aluminum silicate, titanium dioxide, talc, mica, aluminum sulfate, calcium sulfate, graphite, wallastonite, molybdenum disulfide, clay, calcium carbonate and combinations thereof;

(c) up to about 3 to 15% by weight of one or more plasticizers ~~plasticizer~~ selected from the group consisting of hydrocarbons, glycols, aldehydes, ethers, esters, ether-esters and combinations thereof;

(d) up to about 0 to 10% by weight of one or more metal oxides and/or hydroxides selected from the group consisting of zinc oxide, zinc hydroxide, magnesium oxide, magnesium hydroxide, calcium oxide, calcium hydroxide, aluminum hydroxide and combinations thereof;

(e) about 0.5 to 2.5% by weight of one or more peroxides ~~peroxide~~ selected from the group consisting of 2,5-dimethyl-2,5-di(t-butylperoxy)hexyne-3; 2,5-dimethyl-2,5-di(t-butylperoxy)hexane; α, α' -bis-(t-butylperoxy)-p-diisopropylbenzene; dicumyl peroxide; di-t-butyl peroxide; 1,1-bis(t-butylperoxy)-3,3,3-trimethylcyclohexane; 2,4-dichlorobenzoyl peroxide; benzoyl peroxide; p-chlorobenzoyl peroxide; 4,4-bis(t-butylperoxy) valerate; and combinations thereof.

(f) up to about 0 to 5% by weight of one or more coagents ~~coagent~~ selected from the group consisting of maleimides, triallyl cyanurate, triallyl isocyanurate, diallyl terephthalate, 1,2-vinyl polybutadiene, di- and tri-functional methacrylates, diacrylates, metal ion versions thereof and combinations thereof; and

(g) up to about 0 to 3% by weight of one or more antioxidants ~~antioxidant~~ selected from the group consisting of phenols, hydrocinnamates, hydroquinones, hydroquinolines, diphenylamines, mercaptobenzimidazoles, and combinations thereof.

9. (Canceled)

10. (Currently Amended) A vulcanized, automotive fluid-conveying hose ~~tubular~~

structure for conveying fluids in an automotive engine cooler, transmission oil cooler, power transmission cooler, radiator or heater, said vulcanized automotive fluid-conveying hose tubular structure consisting essentially of an inner tubular member, a reinforcement member on said inner tubular member, and a cover on said reinforcement member, wherein said inner tubular member consists essentially of:

about 30 to 75% by weight of an ethylene-vinyl acetate copolymer matrix having a vinyl acetate content of about 60 to 90% based on the weight of said copolymer, said tubular structure comprising about 45 to 60% ethylene-vinyl acetate copolymer, wherein said ethylene-vinyl acetate copolymer matrix has a vinyl acetate content greater than about 40%;

up to about 50% by weight of a polymeric material selected from the group consisting of ethylene-propylene-diene terpolymer (EPDM), styrene-butadiene rubber (SBR), acrylonitrile-butadiene rubber (NBR), ethylene-propylene rubber (EPR), butyl rubber, cis-polybutadiene, cis-polyisoprene, polyurethane, and mixtures thereof; and

about 40 to 55% 25 to 70% by weight of one or more additives selected from the group consisting of process aids, fillers, plasticizers, metal oxides, metal hydroxides, peroxides, coagents, antioxidants and combinations thereof, said additives comprising:

(a) about 0.8 to 2% process aid selected from the group consisting of stearic acid, stearates, polyethylene, amines, oils, organic esters, organic phosphate esters and combinations thereof;

(b) about 20 to 60% filler selected from the group consisting of carbon black, silicon dioxide, fumed silica, precipitated silica, diatomaceous earth, magnesium carbonate, magnesium silicate, aluminum silicate, titanium dioxide, talc, mica, aluminum sulfate, calcium sulfate, graphite, wallastonite, molybdenum disulfide, clay, calcium carbonate and combinations thereof;

(c) about 3 to 15% plasticizer selected from the group consisting of hydrocarbons, glycols, aldehydes, ethers, esters, ether esters and combinations thereof;

(d) about 0 to 10% metal oxides and/or hydroxides selected from the group consisting of zinc oxide, zinc hydroxide, magnesium oxide, magnesium hydroxide, calcium oxide, calcium hydroxide, aluminum hydroxide and combinations thereof;

(e) about 0.5 to 2% peroxide selected from the group consisting of 2,5-dimethyl-

~~2,5-di(t-butylperoxy)hexyne-3; 2,5-dimethyl-2,5-di(t-butylperoxy)hexane; α,α'-bis(t-butylperoxy)-p-diisopropylbenzene; dicumyl peroxide; di-t-butyl peroxide; 1,1-bis(t-butylperoxy)-3,3,3-trimethylcyclohexane; 2,4-diechlorobenzoyl peroxide; benzoyl peroxide; p-chlorobenzoyl peroxide; 4,4-bis(t-butylperoxy)-valerate; and combinations thereof.~~

~~(f) about 0 to 5% coagent selected from the group consisting of maleimides, triallyl cyanurate, triallyl isocyanurate, diallyl terephthalate, 1,2-vinyl polybutadiene, di- and tri-functional methacrylates, diacrylates, metal ion versions thereof and combinations thereof; and~~

~~(g) about 0 to 0.3% antioxidant selected from the group consisting of phenols, hydrocinnamates, hydroquinones, hydroquinolines, diphenylamines, mercaptobenzimidazoles, and combinations thereof.~~

11-20 (Cancelled)

21. (Currently Amended) The tubular structure hose of claim 10 wherein said tubular structure hose is a radiator hose.

22. (Currently Amended) The tubular structure hose of claim 10 wherein said tubular structure hose is a heater hose.

23. (New) The hose of claim 10, wherein said vinyl acetate copolymer matrix has a vinyl acetate content of about 60 to 90%

24. (new) The hose of claim 10, wherein said hose consists essentially of:

about 45 to 60% by weight of an ethylene-vinyl acetate copolymer matrix;
up to about 10% by weight of a polymeric material selected from the group consisting of ethylene-propylene-diene terpolymer (EPDM), styrene-butadiene rubber (SBR), acrylonitrile-butadiene rubber (NBR), ethylene-propylene rubber (EPR), butyl rubber, cis-polybutadiene, cis-polyisoprene, polyurethane, polyamide, and mixtures thereof; and

up to about 40 to 55% by weight of said one or more additives, said one or more additives consisting essentially of:

(a) up to about 8% by weight process aid selected from the group consisting of stearic acid, stearates, polyethylene, amines, oils, organic esters, organic phosphate esters and combinations thereof;

(b) about 20 to 60% by weight filler selected from the group consisting of carbon black, silicon dioxide, fumed silica, precipitated silica, diatomaceous earth, magnesium carbonate, magnesium silicate, aluminum silicate, titanium dioxide, talc, mica, aluminum sulfate, calcium sulfate, graphite, wallastonite, molybdenum disulfide, clay, calcium carbonate and combinations thereof;

(c) up to about 15% by weight plasticizer selected from the group consisting of hydrocarbons, glycols, aldehydes, ethers, esters, ether-esters and combinations thereof;

(d) up to about 10% by weight metal oxides and/or hydroxides selected from the group consisting of zinc oxide, zinc hydroxide, magnesium oxide, magnesium hydroxide, calcium oxide, calcium hydroxide, aluminum hydroxide and combinations thereof;

(e) about 0.5 to 5% by weight peroxide selected from the group consisting of 2,5-dimethyl-2,5-di(t-butylperoxy)hexyne-3; 2,5-dimethyl-2,5-di(t-butylperoxy)hexane; α,α' -bis(t-butylperoxy)-p-diisopropylbenzene; dicumyl peroxide; di-t-butyl peroxide; 1,1-bis(t-butylperoxy)-3,3,3-trimethylcyclohexane; 2,4-dichlorobenzoyl peroxide; benzoyl peroxide; p-chlorobenzoyl peroxide; 4,4-bis(t-butylperoxy) valerate; and combinations thereof.

(f) up to about 5% by weight coagent selected from the group consisting of maleimides, triallyl cyanurate, triallyl isocyanurate, diallyl terephthalate, 1,2-vinyl polybutadiene, di- and tri-functional methacrylates, diacrylates, metal ion versions thereof and combinations thereof; and

(g) up to about 3% weight antioxidant selected from the group consisting of phenols, hydrocinnamates, hydroquinones, hydroquinolines, diphenylamines, mercaptobenzimidazoles, and combinations thereof.

25. (New) The tubular structure of claim 1 wherein tubular structure is a blend of said ethylene-vinyl acetate copolymer matrix, said polymeric material and said additives.

26. (New) The tubular structure of claim 1 wherein said inner tubular structure is a blend of said ethylene-vinyl acetate copolymer matrix, said polymeric material and said additives.

27. (New) The hose of claim 10 wherein said inner tubular structure is a blend of said ethylene-vinyl acetate copolymer matrix, said polymeric material and said additives.